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Title:

Investigation of surface flux feedbacks for coupled and uncoupled atmosphere-ocean anomalies

Abstract:

Variability in the atmosphere and ocean are linked through coupled processes via the surface exchanges of heat, moisture, and momentum. This coupling can occur predominantly via one-way (ocean forcing atmosphere or atmosphere forcing ocean) or two-way interactions. The dominant type of interaction can vary both regionally and with season. The existence of the coupled variability can act to enhance the persistence of anomalies and therefore may be important to seasonal (and longer) forecasts. The leading components of surface exchange that regulate the damping of the atmospheric and oceanic anomalies most likely also varies regionally and seasonally. This study seeks to elucidate the roles of the various surface flux components using satellite based data sets. Using dynamical relationships expected for one-way forcing regimes, coupled and uncoupled variability is isolated and used in conjunction with composite-type analyses to reveal the nature of these coupling mechanisms and their variation in space and time. Results of this study can be useful in examining the veracity of general circulation model output by understanding how the coupling mechanisms are replicated as found in satellite based observations.